REMARKS

This paper is in response to the final Office Action dated February 9, 2007. In reply, Applicant requests continued examination of this application. Applicant has amended the application as set forth above. Specifically, Claims 1, 10, 12, 13, 15, 16, 19 and 32 have been amended and Claims 36-38 are added. Claims 1-38 remain pending in this application. No new matter is added by the amendments as discussed below. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the above amendments and the following remarks.

Discussion of Amendments to the Claims

Claims 1, 19 and 32 have been amended to clarify the invention. The amendments to Claims 1, 19, 32 and 36-038 are supported by the original application, e.g., page 9 line 19 through page 10 line 9 of the specification, and Figs. 2b and 2c. Claims 12, 15 and 16 have been amended to correct grammatical errors. As such, the amendments do not constitute the addition of new matter. Applicant respectfully requests the entry of the amendments.

Discussion of Rejection Under 35 U.S.C. § 102

The Examiner rejected Claims 1 and 3-35 under 35 U.S.C. § 102(b) as being anticipated by Daugman (U.S. Patent No. 5,291,560). However, Daugman does not anticipate these claims as discussed below.

The Law of Anticipation

Anticipation under Section 102 can be found only if a reference shows exactly what is claimed. *Titanium Metals Corp. v. Banner, 778 F.2d 775 (Fed. Cir. 1985)*. More particularly, a finding of anticipation requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention. *Electro Med. Sys. S.A. v. Cooper Life Sciences, 34 F.3d 1048, 1052 (Fed. Cir. 1994)*. "To anticipate, every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim." *Brown v. 3M, 265 F.3d 1349 (Fed. Cir. 2001)*.

Disclosure of Daugman

Daugman discloses an iris recognition system, which obtains and processes an image of an

eye. As part of the processing, Daugman teaches a method of locating two boundaries of the iris, which are a pupillary (inner) boundary and a limbic (outer) boundary. Both the inner and outer boundaries are detected by finding an abrupt and sudden change in brightness summed along each of 'exploding circles' whose radii are steadily increasing. *See* col. 5, lines 31-60 and col. 7 lines 6-30. Specifically, for each exploding circle, and for each value of radius, the total image brightness is summed over a fixed number of points, for example 128 points, lying on the circle. The maximum rate of change in this brightness, as the radius steadily expands, represents the boundaries of the iris. *See* col. 5, lines 42-60. One difference between detections of the inner and outer boundaries is that in locating the outer boundary, the brightness is summed along two horizontally exploding pie wedges of the exploding circles whereas in locating the inner boundary the brightness is summed along the whole exploding circles. *See* col. 7, lines 24-26. This is because eye images to be processed may not contain the outer boundary in its entirety while containing two horizontally exploding pie wedge portions.

As discussed, Daugman determines the outer boundary of the iris by obtaining brightness summed along exploding pie wedges and comparing the brightness against each other. Daugman does not teach finding of a pixel that is located on the outer boundary and also located on an imaginary line extending from a location on the inner boundary, nor finding of another pixel that is located on the outer boundary and also located on another imaginary line extending from another location on the inner boundary.

Daugman Does Not Anticipate Claim 1

Claim 1 recites (1) providing location information of the inner boundary of the iris image, wherein a first inner boundary pixel and a second inner boundary pixel are located at different points on the inner boundary; (2) finding a first outer boundary pixel located on a first imaginary line extending from the first inner boundary pixel, wherein a pixel located on the first imaginary line is determined to be the first outer boundary pixel when the difference of the image information between the pixel and its neighboring pixel which are located on the first imaginary line becomes the maximum among differences of the image information between two neighboring pixels located on the first imaginary line; and (3) finding a second outer boundary pixel located on a second imaginary line extending from the second inner boundary pixel, wherein a pixel located on the second imaginary line is determined to be the second outer

boundary pixel when the difference of the image information between the pixel and its neighboring pixel which are located on the second imaginary line becomes the maximum among differences of the image information between two neighboring pixels located on the second imaginary line.

As discussed and agreed with the Examiners, Daugman does not teach the claimed features. Therefore, Daugman does not anticipate Claim 1 and its dependent claims, Claims 2-18, 20-31, 34 and 35. Applicant respectfully requests the withdrawal of the rejection.

Daugman Does Not Anticipate Claims 19 and 32

Each of Claims 19 and 32 recites (1) means for providing location information of the inner boundary of the iris image, wherein a first inner boundary pixel and a second inner boundary pixel are located at different points on the inner boundary; (2) means for finding a first outer boundary pixel located on a first imaginary line extending from the first inner boundary pixel, wherein a pixel located on the first imaginary line is determined to be the first outer boundary pixel when the difference of the image information between the pixel and its neighboring pixel which are located on the first imaginary line becomes the maximum among differences of the image information between two neighboring pixels located on the first imaginary line; and (3) means for finding a second outer boundary pixel located on a second imaginary line extending from the second inner boundary pixel, wherein a pixel located on the second imaginary line is determined to be the second outer boundary pixel when the difference of the image information between the pixel and its neighboring pixel which are located on the second imaginary line becomes the maximum among differences of the image information between two neighboring pixels located on the second imaginary line.

As discussed in connection with Claim 1, Daugman does not teach the foregoing features of Claims 19 and 32. Thus, Daugman does not anticipate Claim 19 or 32, and doest not anticipate Claim 33 depending from Claim 32. Applicant respectfully requests the withdrawal of the rejection.

Discussion of Rejection of Claim 2 Under 35 U.S.C. § 103

The Examiner rejected Claim 2 under 35 U.S.C. § 103(a) as being unpatentable over Daugman. Applicant respectfully disagrees and submits that Claim 2 is patentable over as

discussed below.

Claim 2 depends from Claim 1 and accordingly incorporates all the features of Claim 1. As discussed above in connection with the rejection under § 102(b), Daugman does not teach all the limitations of Claim 1. In rejecting Claim 2, the Examiner took an official notice on the Canny edge detection. However, the teaching of Canny edge detection does not remedy the deficiencies of Daugman. Therefore, the combination of Daugman and the Examiner's official notice still does not teach all the limitations of Claim 1. For this reason, there is no *prima facie* case of obviousness against Claim 1 and therefore its dependent claim, Claim 2. Applicant respectfully requests the withdrawal of this rejection.

Dependent Claims

Although Applicant has not addressed all the issues of the dependent claims, Applicant respectfully submits that Applicant does not necessarily agree with the characterization and assessments of the dependent claims made by the Examiner, and Applicant believes that each claim is patentable on its own merits. Claims 2-18, 20-31 and 33-35 are dependent either directly or indirectly on the above-discussed independent Claims 1 and 32. Applicant respectfully submits that pursuant to 35 U.S.C. § 112, ¶4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore, Applicant respectfully requests the withdrawal of all claim rejections and prompts allowance of the claims.

New Claims

New Claims 36-38 are dependent either directly or indirectly on the above-discussed independent claim, Claim 1 and define additional technical features. Clams 36-38 incorporate by reference all the limitations of Claim 1 and include their own patentable features, and are therefore in condition for allowance.

No Disclaimers or Disavowals

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this

application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. Applicant reserves the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that Applicant has made any disclaimers or disavowals of any subject matter supported by the present application.
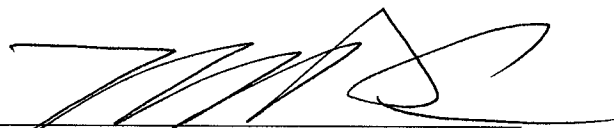
CONCLUSION

Applicant has endeavored to address all of the Examiner's concerns as expressed in the outstanding Office Action. In light of the above amendments and remarks, this application is in condition for allowance. If the Examiner has any questions which may be answered by telephone, he is invited to call the undersigned directly.

Respectfully submitted,

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